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FAX COVER SHEET

Date: April 26, 2007
Fax: 571-273-8300
To: Craig E. Walter
From: Bruce R. Needham
Re: Patent Application 10/713,445 Interview

Number of Pages including cover: 5

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PTOL-413A (09-06)

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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 10/713,445 First Named Applicant: David Alan Burton
 Examiner: Craig E. Walter Art Unit: 2188 Status of Application: non-final rejection after RCE

Tentative Participants:

(1) Bruce R. Needham (2) Craig E. Walter
 (3) _____ (4) _____

Proposed Date of Interview: Earliest Convenience Proposed Time: _____ (AM/PM)

Type of Interview Requested:

(1) ☒ Telephonic (2) ☐ Personal (3) ☐ Video Conference

Exhibit To Be Shown or Demonstrated: ☐ YES ☒ NO
 If yes, provide brief description: _____

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☒ Continuation Sheet Attached

Brief Description of Arguments to be Presented:

See Attached Sheets

An interview was conducted on the above-identified application on _____.

NOTE: This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).

This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible.

Bruce R. Needham
 Applicant/Applicant's Representative Signature

Examiner/SPE Signature

Bruce R. Needham
 Typed/Printed Name of Applicant or Representative

56,421
 Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 21 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application no. 10/713,445
Interview Request – Attached Issue Sheets

Dear Examiner,

The Applicants have expended their budget for this case so that the resources are not available to argue for broad claims. The Applicants would like to add a narrowing amendment that will position this Application for prompt allowance. In that light, we would like to discuss the following points with you at your earliest convenience:

1. Regarding Claim 1 – The Applicants' starting point for discussion regarding this claim is that the Applicants do not find that Dunham or Manley teaches a storage pool management module that changes the storage capacity of the virtual volume by allocating and de-allocating storage volume to the storage pool of the virtual volume in response to the change to the storage capacity. Instead, the Applicants find that Dunham teaches allocating spare primary storage capacity during a restore operation, Dunham at col. 18, ll. 27-33, col. 21, ll. 16-26, Fig. 15, steps 241, 242, and then copying a backup volume to the spare capacity of the primary volume, *id.* at col. 7, ll. 47-50, col. 18, ll. 27-33, col. 21, ll. 64-66, Fig. 15, step 244, and then assigning a new virtual volume number to the backup copy stored in the spare capacity of the primary volume. *Id.* at col. 21, ll. 20-63. Note that Dunham teaches assigning a new virtual volume number (i.e., the next available virtual volume number) to the spare primary volume. Dunham does not teach increasing storage capacity of any virtual volume by adding volumes from a storage pool. Claim 1 requires allocating spare storage volumes to increase the capacity of the virtual volume that stores incremental storage data, not adding a new virtual volume.

The Applicants also do not find that Dunham teaches de-allocating a storage volume of the storage pool of the virtual storage volume as recited in Claim 1. Instead, the Applicants find that Dunham teaches de-allocating the spare storage volume on the primary storage where the backup data was copied when the virtual volume mapped to the backup data is no longer required and also releasing the virtual volume number and spare capacity for future use. *Id.* at col. 22, ll. 59-65.

In a separate, unrelated de-allocation, Dunham teaches that during a backup operation for a log-structured file system, new data is copied to a new location in the primary storage while the old data remains in its current location. *Id.* at col. 6, ll. 33-46. The a snapshot of the old data is then copied to the secondary storage volume while the new data is concurrently copied to the new location on the primary volume. *Id.* at col. 46-58. Once the snapshot of the old data is copied to the secondary storage, the primary volume that the old data occupied on the primary volume is de-allocated and becomes available to store other data. *Id.* at col. 6, l. 58 to col. 7, l. 17. This de-allocation is unrelated to the allocation of spare primary storage mentioned in the restore process and the virtual volume number assigned during the restore process is unaffected by the de-allocation during backup for a log-structured file system.

In order to clarify that the allocation and de-allocation of storage volumes is related to the virtual volume that stores incremental backup data, the Applicants propose amending Claim 1 as set for below.

2. Also regarding Claim 1 – The Applicants' starting point for discussion regarding this claim is that the Applicants do not find that one of ordinary skill in the art would include Manley's asynchronous incremental backup system. Instead, the Applicants find that Dunham specifically and exclusively teaches backing up only an entire logical data structure corresponding to a physical storage unit even when only a file, directory, etc. has been requested for backup. *Id.* at col. 11, l. 49 to col. 12, l. 39. Dunham also teaches away from backing up anything less than an entire physical storage unit. *Id.* at col. 11, ll. 49-64, col. 13, ll. 22-38. Given the teachings of Dunham, the Applicants find that one of skill in the art would be led away from any incremental backup taught by Manley.

Based on the above items, the Applicants would like to discuss whether Claim 1, upon further reflection, may be allowable. If not, the Applicant would like to discuss whether a claim including any element or combination of elements other claims not specifically discussed above would be allowable. A suggested amendment would be as follows:

1. (Currently Amended) An apparatus for managing incremental storage, the apparatus comprising:
 - a policy management module configured to set a storage management policy for storage capacity of an incremental backup virtual volume, wherein the incremental backup virtual volume is configured to store incremental storage data from an incremental storage operation on a primary volume and the incremental backup virtual volume comprises a storage pool that includes at least one storage volume;
 - a storage pool management module configured to monitor available storage capacity of the incremental backup virtual

volume and to change the storage capacity of the virtual volume in response to the storage management policy and the available storage capacity, wherein changing the storage capacity comprises dynamically allocating and de-allocating a storage volume to the storage pool of the incremental backup virtual volume in response to the change to the storage capacity; and

an incremental log corresponding to the incremental backup virtual volume, the incremental log configured to map a virtual address of the incremental backup virtual volume assigned to the incremental storage data to a physical storage address of the at least one storage volume of the storage pool.